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CTCGAGGACAGTGACCTGGGAGTGAGTACAAGGTGAGGCCACCACTCAGGGT
 GCCAGCTCCAAGCGGGTCACAGGGACGAGGGCTGCGGCCATCAGGAGGCCCT
 GCACACACATCTGGGACACGCGCCCCCGAGGGCCAGTTCACCTCAGTGCGCC
 TCATTCTCCTGCACAAAAGCGCCCCCATCCTTTCTTCACAAGGCTTTCGTGG
 AAGCAGAGGGCGTCGATGCCCAGTACCCTCTCCCTTTCCCAGGCAACGGGACC
 CCAAGTTTGCTGACTGGGACCACCAAGCCACGCATGCGTCAAGAGTGAGAGT
 CCGGGACCTAGGCAGGGGCCCTGGGGTTGGGCCTGAGAGAGAAGAGAACCTC
 CCCCAGCACTCGGTGTGCATCGGTAGTGAAGGAGCCTCACCTGACCCCCGCT
 GTTGCTCAATCGACTTCCCAAGAACAGAGAGAAAAGGGAACCTCCAGGGCGG
 CCCGGGCCTCCTGGGGGTTCCCACCCCATTTTTAGCTGAAAGCACTGAGGCA
 GAGCTCCCCCTACCCAGGCTCCACTGCCCCGGCACAGAAATAACAACCCACGGT
 TACTGATCATCTGGGAGCTGTCCAGGAATTC

FIG._1A

1 GCTGGGCTAA ACTGGGCTAG CCTGAGCTGG GCTGAACTGG GCTGCTGGGC
 51 TGGACTGGGT AAGCTGGGCT GAGCTGGGTT GGGTGGAAAT GGGCTGAGCT
 101 GAGCTAGGCT AAACTGGGTT TGGCTGGGCT GGGCTGGGCT GGG

FIG._2B

1 GGTTTGGCTG GGCTGGGCTG GGCTGGGCTG GGTTCACTG AGCGGGTTGG
 51 GTTAGACTGG GTCAAACCTGG TTCAGC

FIG._2C

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GERMLINE & LOCUS

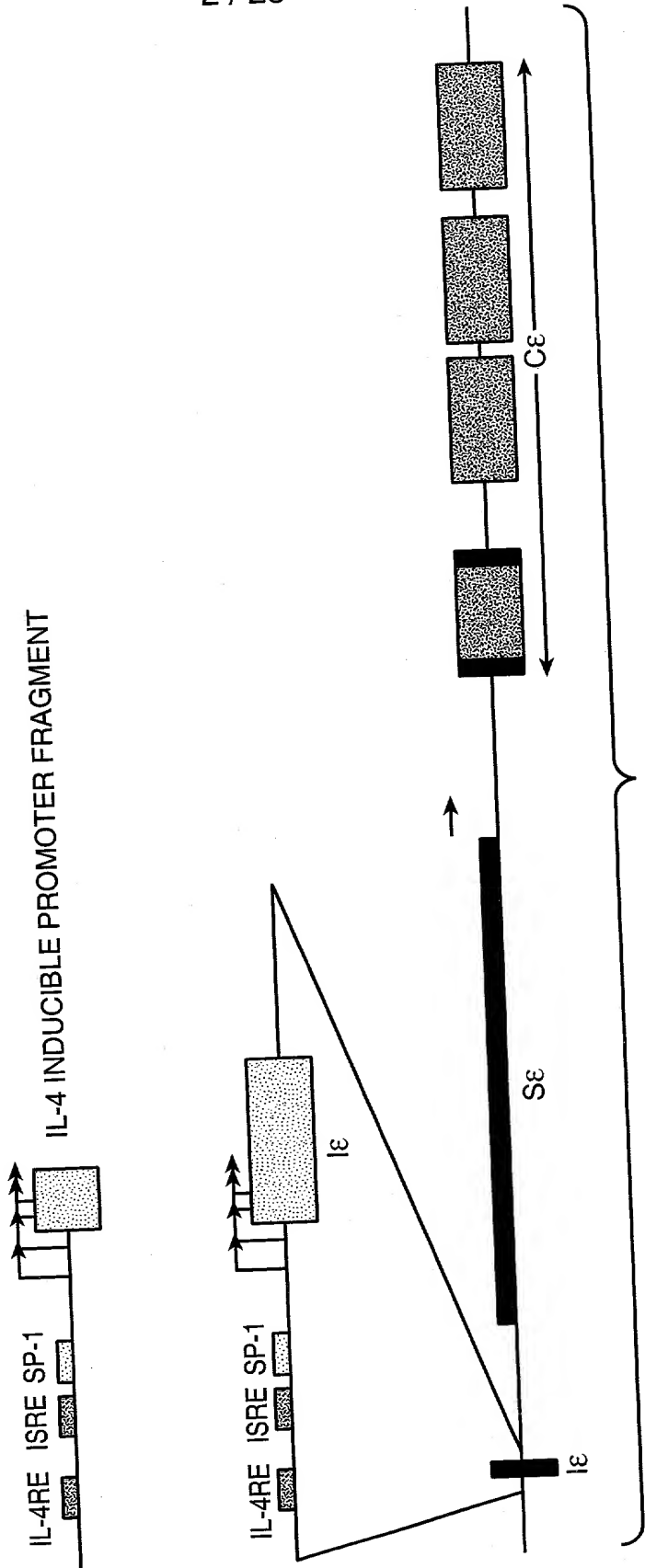
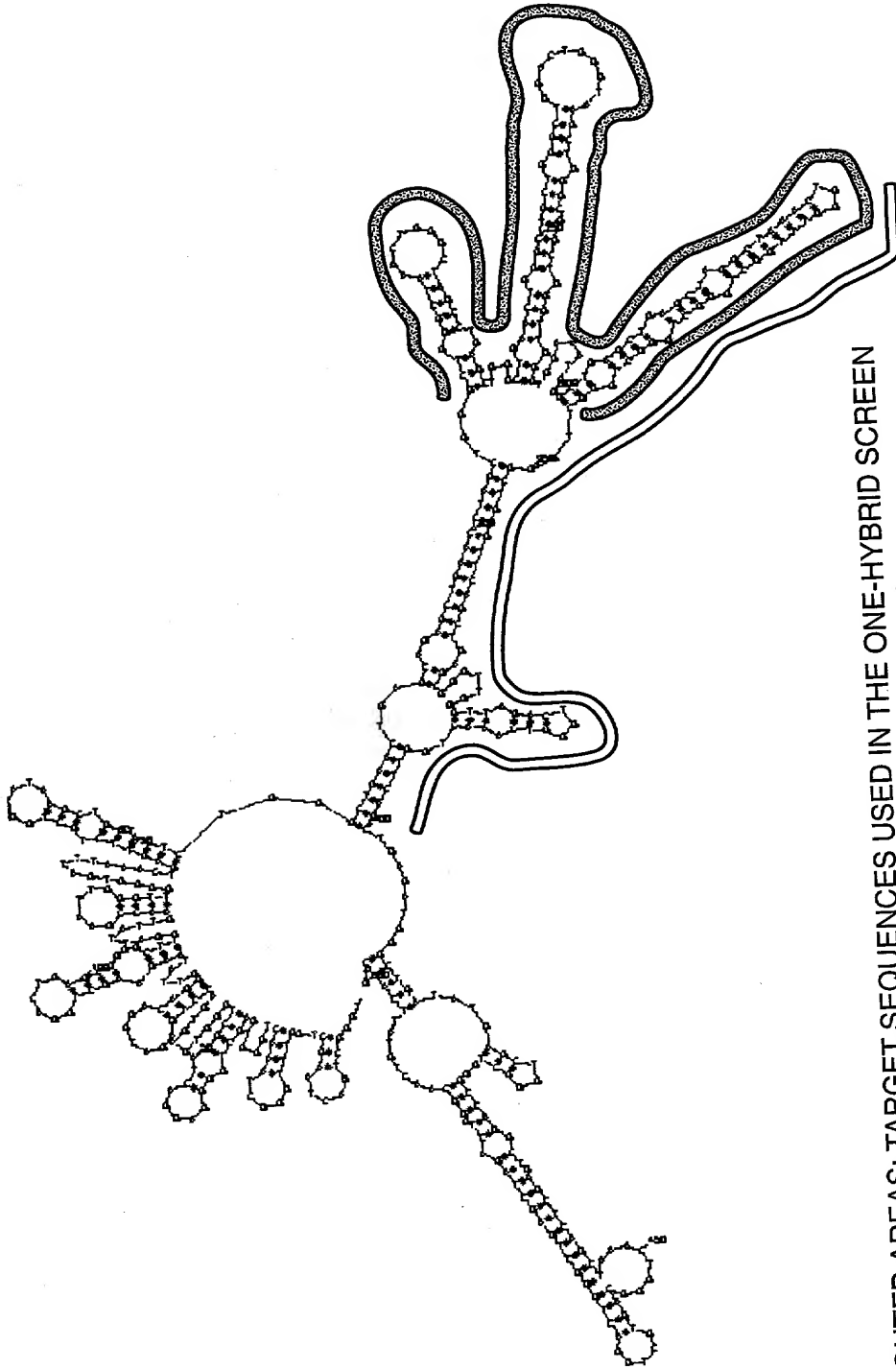


FIG. 1B

LOW ENERGY DNA FOLDING OF THE S ϵ REGION



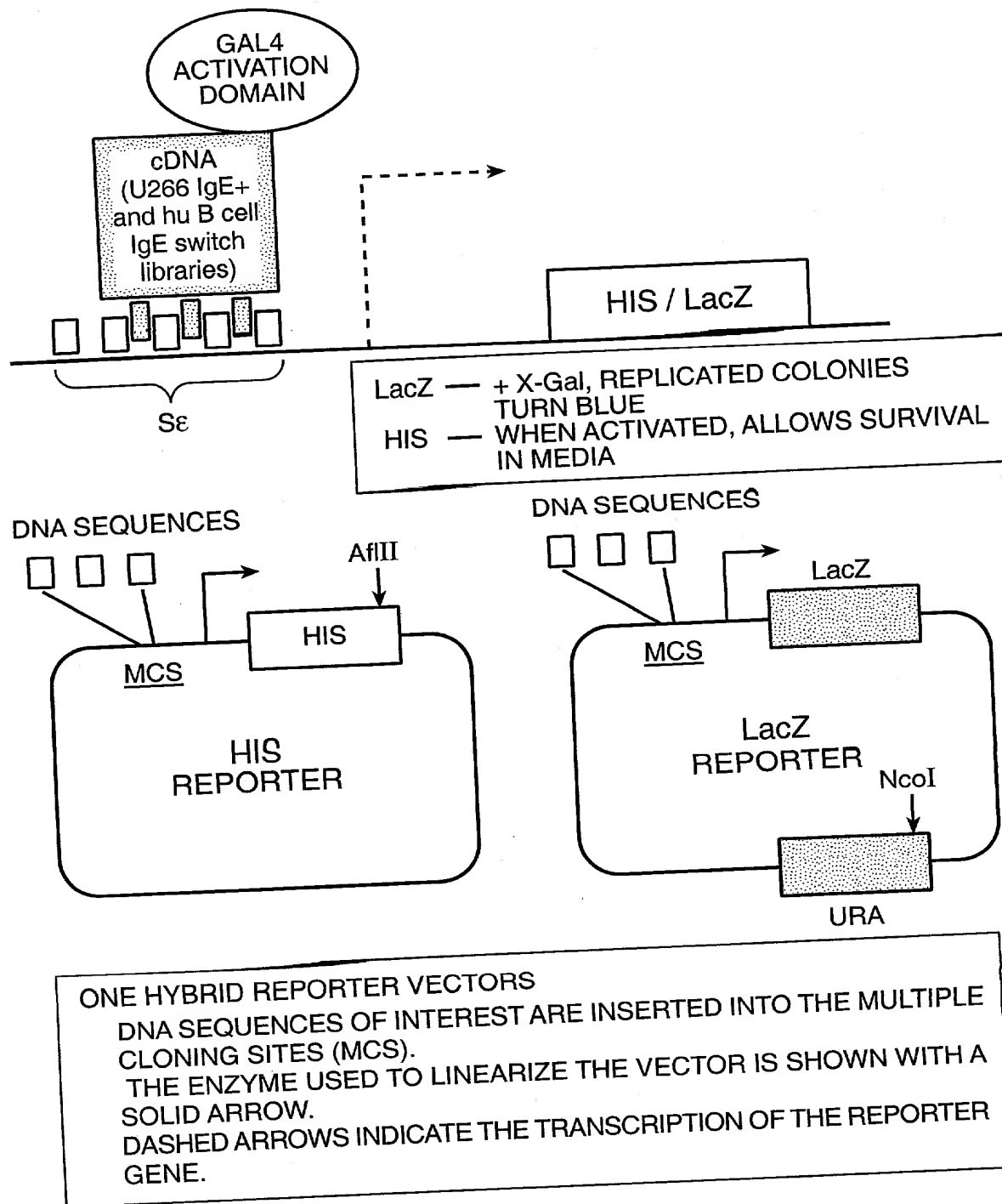
HIGHLIGHTED AREAS: TARGET SEQUENCES USED IN THE ONE-HYBRID SCREEN

APPENDIX E

FIG._2A

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YEAST ONE-HYBRID SCREENING

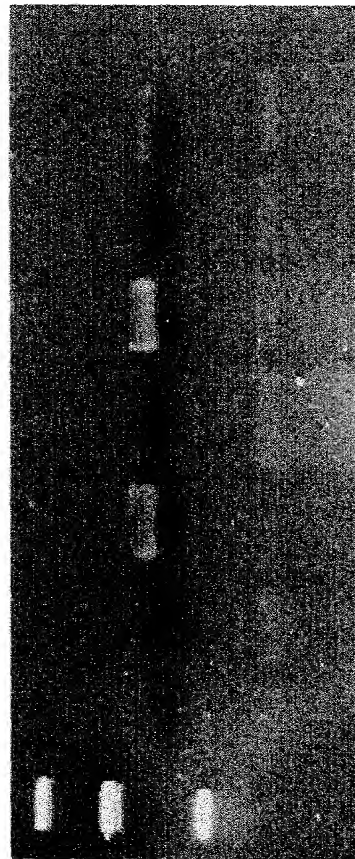


APPENDIX F

FIG._3

IL-4 INDUCTION OF GERMLINE ϵ mRNA IN THE
IgM + B CELL LINES: CA-46, MC-116 AND DND39

DND39 + IL-4
DND39 - IL-4
MC-116 + IL-4
MC-116 - IL-4
CA-46 + IL-4
CA-46 - IL-4
NEG. CONT.

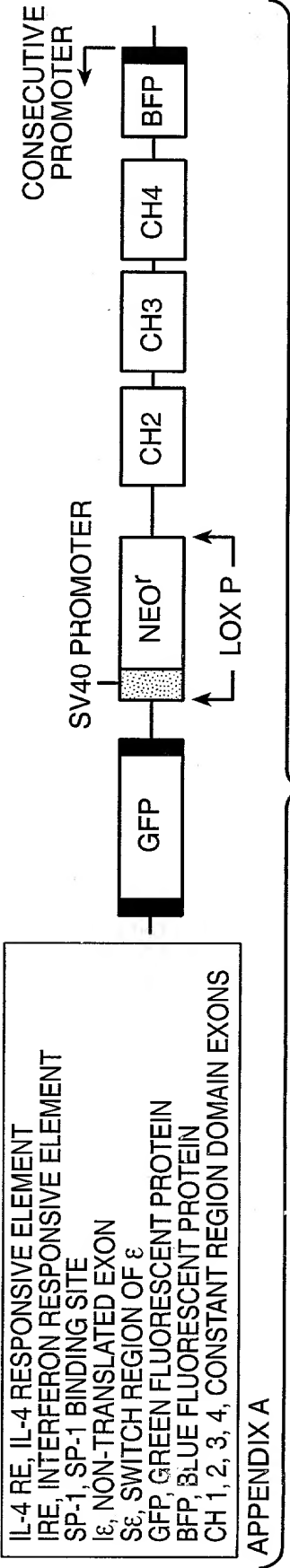
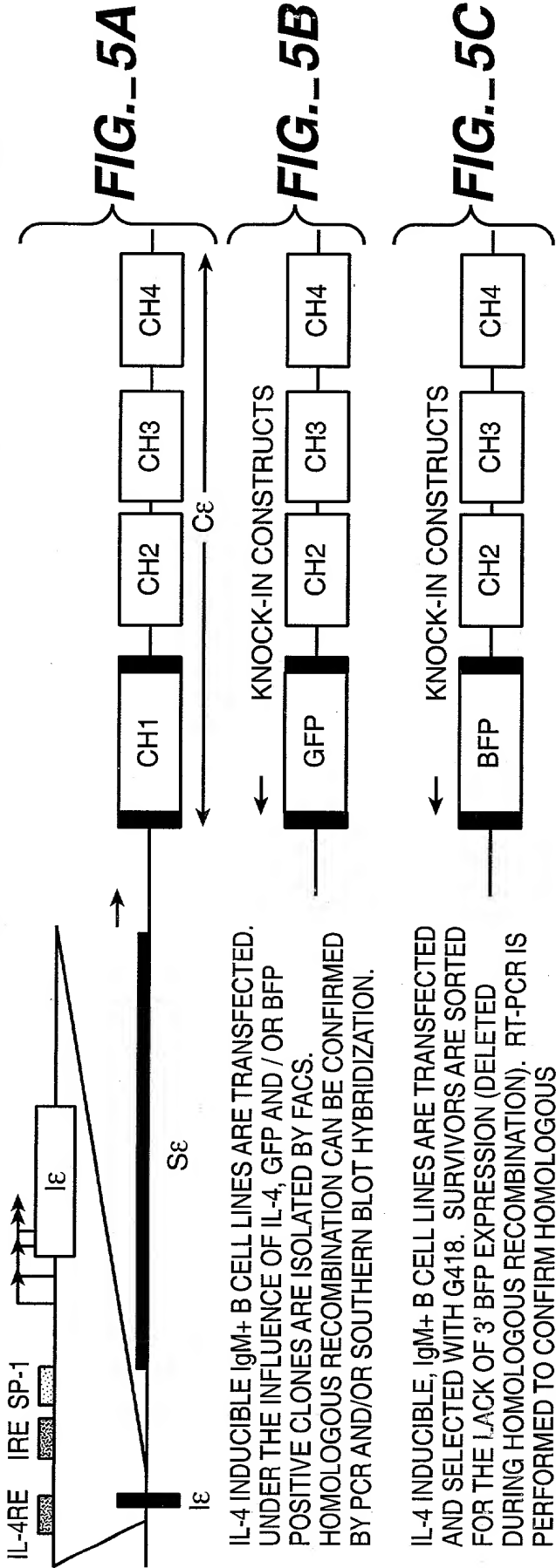


CELLS WERE INCUBATED FOR 48 HRS. IN 300 U / ml OF h-IL-4.
RT-PCR WAS PERFORMED USING PRIMERS SPECIFIC FOR THE GERMLINE
 ϵ EXON AND THE 5'-END OF THE C ϵ CH1 EXON (PREDICTED SIZE ~ 200 bp).

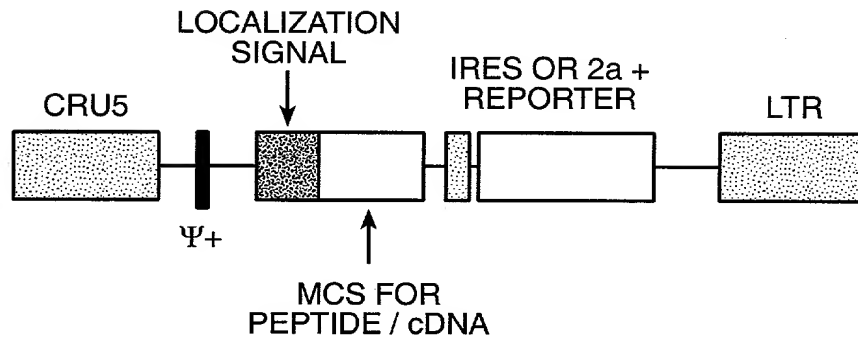
APPENDIX G

FIG._4

APPROACHES TO GENERATE GERMLINE ϵ PROMOTER KNOCK-IN REPORTER CELL LINES



RIGEL BASE VECTOR



ALL COMPONENTS ARE UNIQUELY CASSETTED FOR FLEXIBILITY

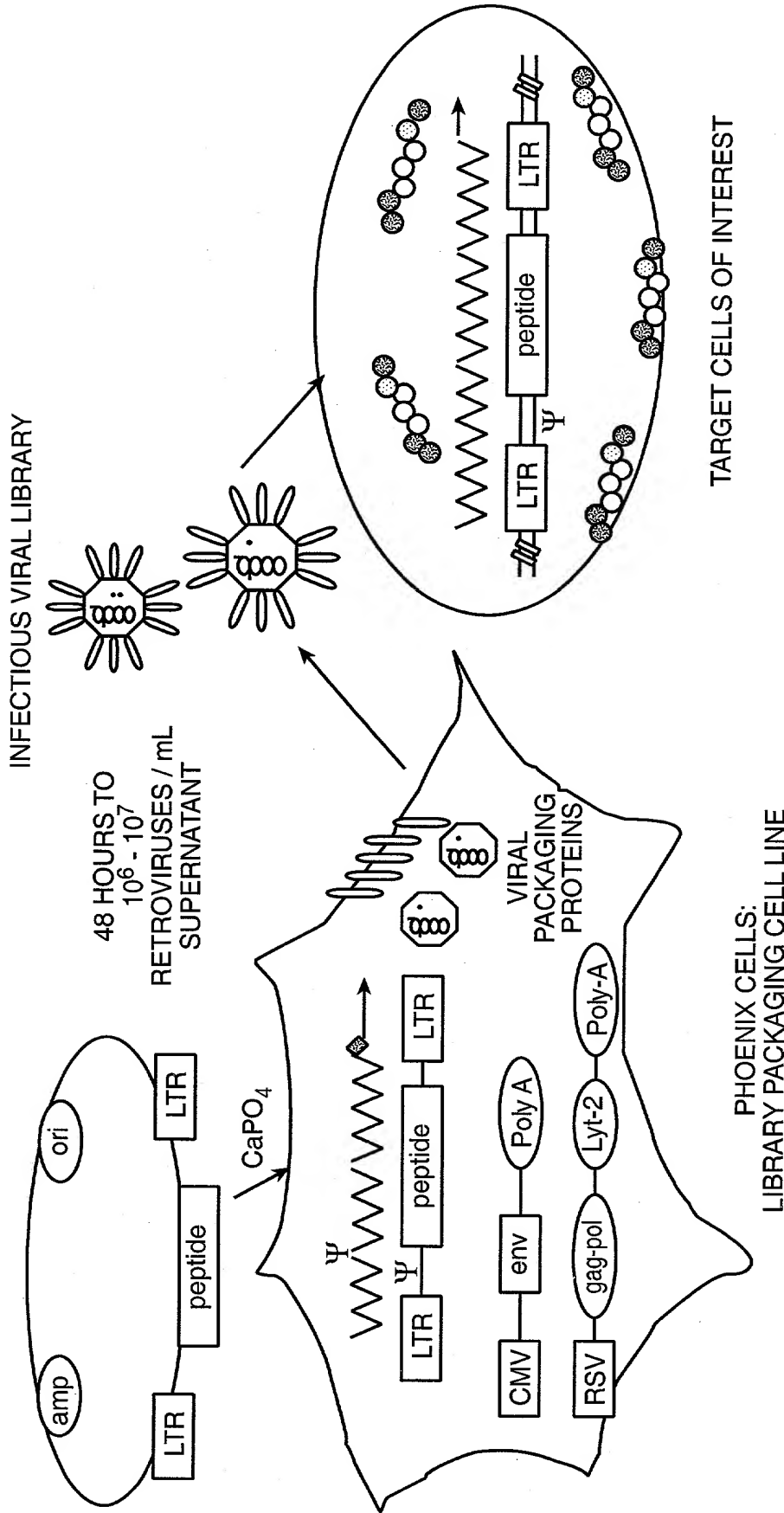
CRU5, MODIFIED LTR
 LTR, LONG TERMINAL REPEAT
 $\Psi+$, PACKING SIGNAL
 LOCALIZATION SIGNAL: NUCLEAR, CELL MEMBRANE, GRANULAR
 MCS, MULTIPLE CLONING SITE
 IRES, INTERNAL RIBOSOME ENTRY SITE
 2a, SELF-CLEAVING PEPTIDE

APPENDIX I

FIG._6

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PROTOCOL FOR TRANSFECTION OF PHOENIX CELLS
AND INFECTION OF NONADHERENT TARGET CELLS



APPENDIX I

FIG..7

ε HEAVY CHAIN GFP / BFP KNOCK-IN CELL LINE

U266 ε HEAVY CHAIN

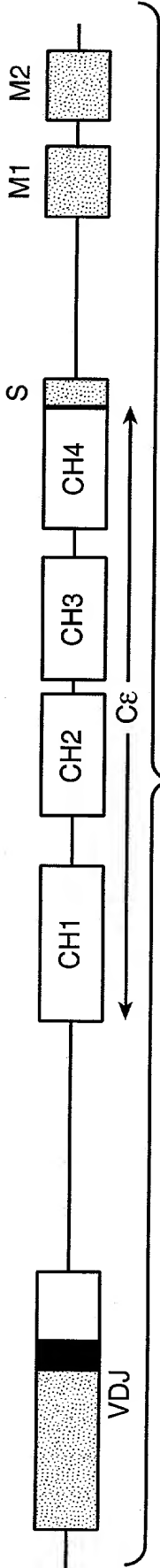
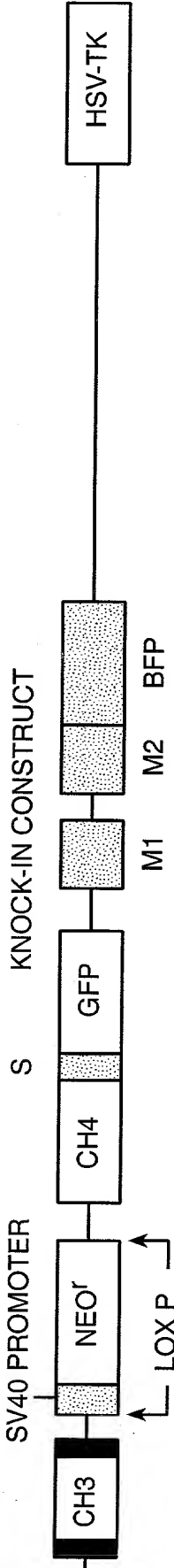


FIG._8A



S, SECRETORY EXON
 GFP, GREEN FLUORESCENT PROTEIN
 BFP, BLUE FLUORESCENT PROTEIN
 Neo^r, NEOMYCIN RESISTANCE GENE
 VDJ, V REGION EXON
 CH 1, 2, 3, 4, CONSTANT REGION DOMAIN EXONS
 M1, M2, MEMBRANE EXONS
 HSV-TK, HERPES SIMPLEX VIRUS-THYMIDINE KINASE

U266 CELLS ARE TRANSFECTED AND SELECTED WITH G418. SURVIVORS ARE TREATED WITH GANCICLOVIR (HSV-TK DELETED DURING HOMOLOGOUS RECOMBINATION). RT-PCR IS PERFORMED TO CONFIRM HOMOLOGOUS RECOMBINATION. THOSE CLONES ARE TRANSFECTED WITH *cre* TO REMOVE THE SV40 NEOMYCIN RESISTANCE GENE.

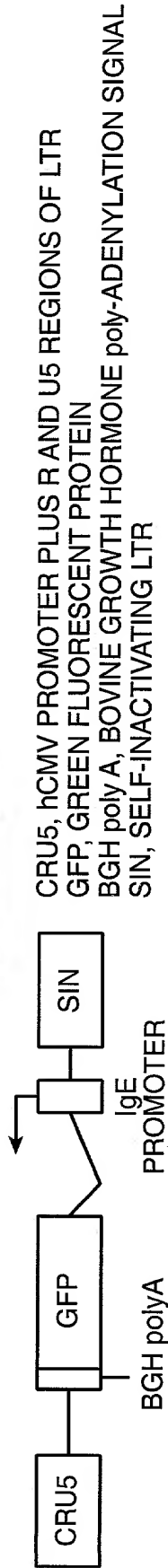
APPENDIX D

FIG._8B

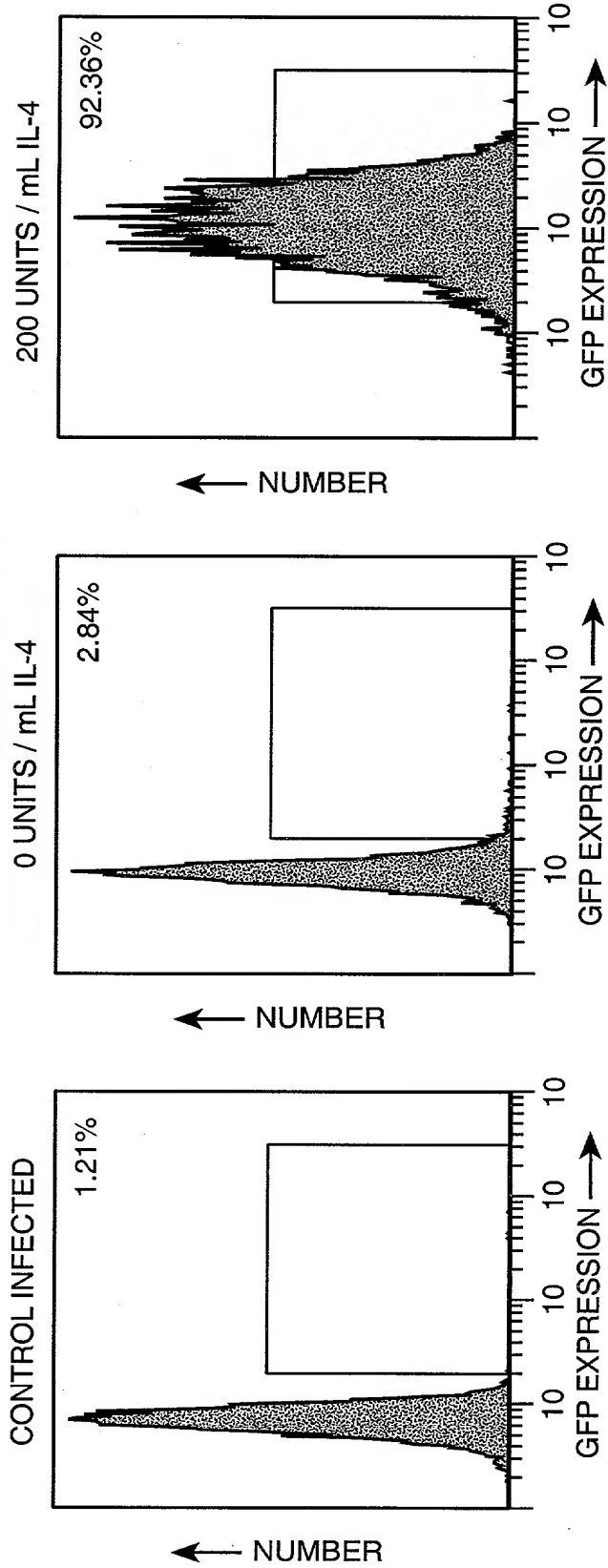
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IL-4 INDUCIBLE & PROMOTER REPORTER CELL LINE

REPORTER CONSTRUCT



IL-4 INDUCED REPORTER

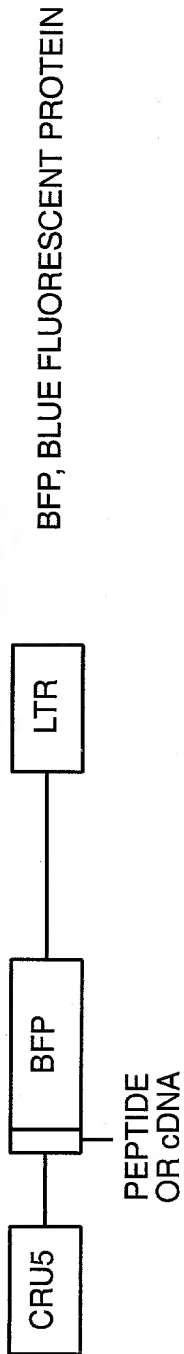


APPENDIX C

FIG. 9A

REPORTER LINE INFECTED WITH BFP CONSTRUCT

LIBRARY CONSTRUCT



FACS PROFILE OF CELLS WITH BOTH REPORTER AND PEPTIDE LIBRARY

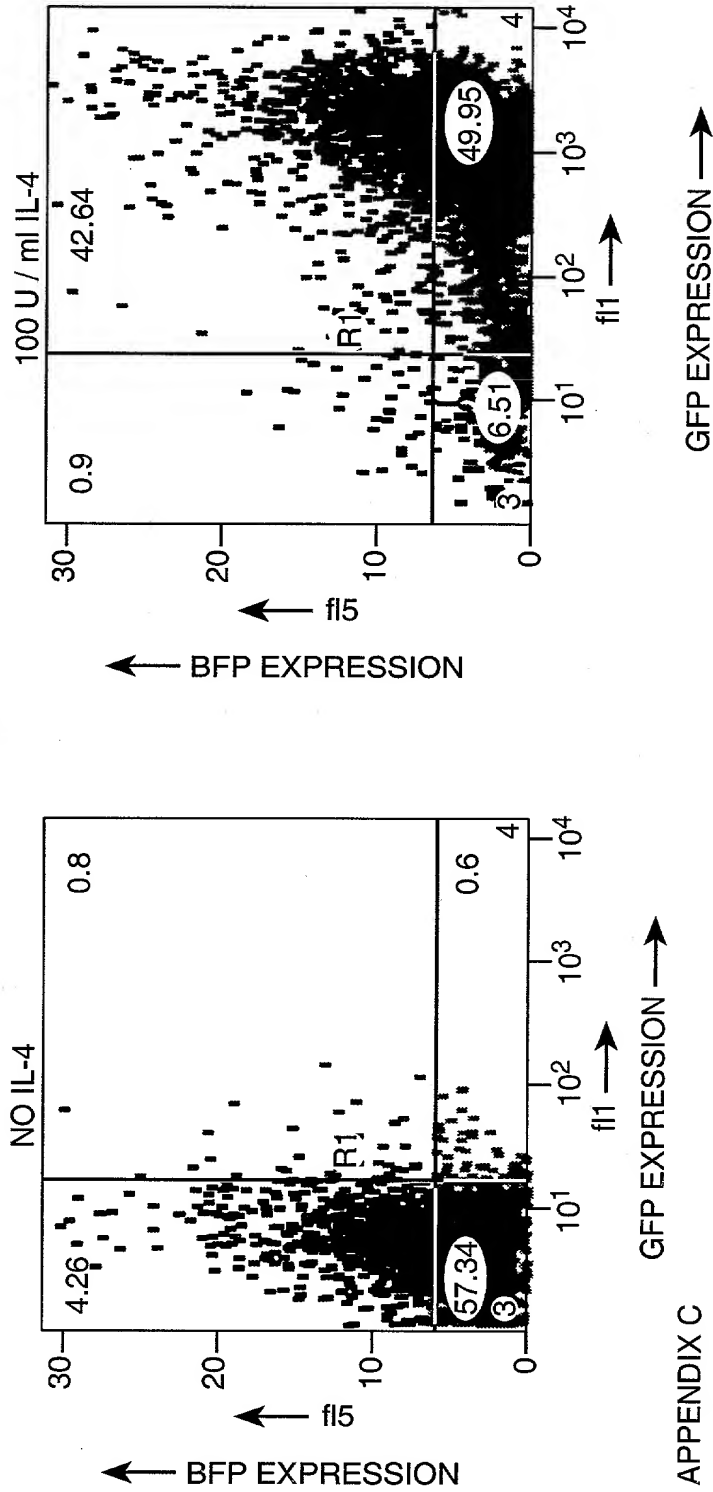
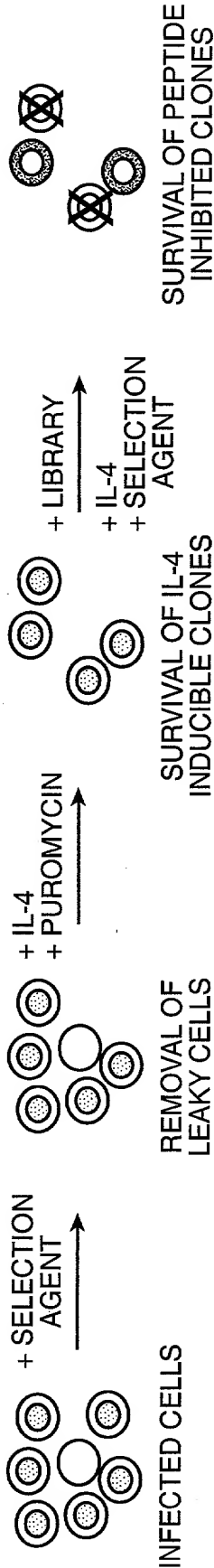


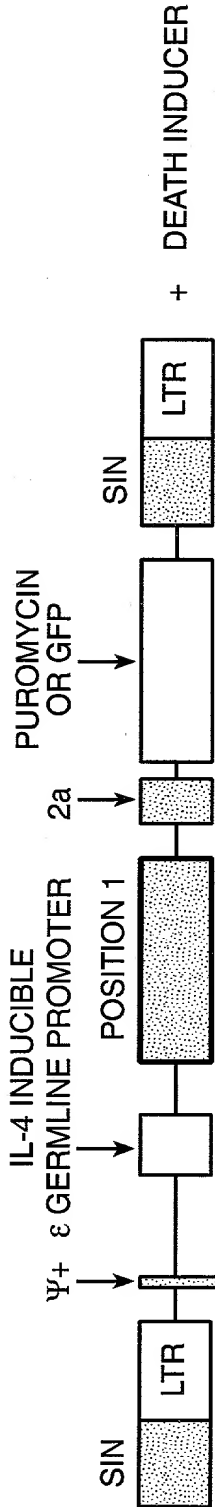
FIG..9B

APPENDIX C

SCREEN FOR PEPTIDE INHIBITORS OF THE GERMLINE ϵ PROMOTER



SURVIVAL CONSTRUCT



POSITION 1

FAS CHIMERIC RECEPTOR*

*(MOUSE FASK EXTERNAL / MOUSE CD8 EXTERNAL + HUMAN TRANSMEMBRANE AND CYTOPLASMIC DOMAINS)

SIN, SELF-INACTIVATING LTR
LTR, LONG TERMINAL REPEAT

HSV-TK

P450 2B1

p21 PEPTIDE

ALL COMPONENTS ARE CASSETTED FOR FLEXIBILITY

SELECTION AGENT

α FAS

GANCICLOVIR

CYCLOPHOSPHAMIDE

NONE (SELF SELECTION)

FIG. 10

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1-845 CMV promoter/R/U5 5' LTR
 1322 GAG ATG-ATC mutation
 850-2100 extended Ψ region
 2146-2173 two Bstx1 peptide cloning sites
 2205-2723 ECMV IRES (cloned as EcoR1/MscI fragment from
 pCITE-4a [Novagen])
 2746-3465 GFP coding region
 3522-4115 3' LTR
 4122-6210 pGEM backbone (pUC origin, ampR)

ATCACGAGGCCCTTTTCGTCTTCAAGAACAGCTTTGCTCTTAGGAGTTTCCTAATACATCC
 CAAACTCAAATATATAAAGCATTTGACTTGTTCTATGCCCTAGTTATTAATAGTAATCAA
 TTACGGGGTTCATTAGTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACGGTAA
 ATGGCCCCGCTGGCTGACCGCCCAACGACCCCCGCCCATTGACGTCAATAATGACGTATG
 TTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGT
 AAAGTGGCCACTTGCGAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATTGACG
 TCAATGACGGTAAATGGCCCGCTGGCATTATGCCAGTACATGACCTTATGGGACTTTC
 CTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTTGGC
 AGTACATCAATGGGCGTGGATAGCGGTTTGACTCACGGGGATTTCCAAGTCTCCACCCCA
 TTGACGTCAATGGGAGTTTGTGGTGGCACCACCAATCAACGGGACTTTCCAAAATGTCGTA
 ACAACTCCGCCCCATTGACGCAAATGGGCGGTAGGCATGTACGGTGGGAGGTCTATATAA
 GCAGAGCTCAATAAAAGAGCCACAACCCCTCACTCGGGGCGCCAGTCCCTCCGATTGACT
 GAGTCGCCCCGGGTACCCGTGTATCCAATAAACCCCTCTTGCAAGTTCATCCGACTTGTGGT
 CTCGCTGTTTCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTT
 CATTTGGGGGCTCGTCCGGGATCGGGAGACCCCTGCCAGGGACCACCGACCCACCACCG
 GGAGGTAAGCTGGCCAGCAACTTATCTGTGTCTGTCCGATTGTCTAGTGTCTATGACTGA
 TTTTATGCGCCTGCGTCCGTACTAGTTAGCTAACTAGCTCTGTATCTGGCGGACCCGTGG
 TGGAAGTACGAGTTCGGAACACCCGGCCGCAACCCCTGGGAGACGTCCCAGGGACTTCGG
 GGGCCGTTTTTGTGGCCCGACCTGAGTCCAAAAATCCCGATCGTTTTGGACTCTTTGGTG
 CACCCCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGACGAGAACCTAAAACAGTTCC
 CGCCTCCGTCTGAATTTTTGCTTTTCGGTTTGGGACCGAAGCCGCGCCGCGCTTTGTCT
 GCTGCAGCATCGTTCTGTGTTGTCTCTGTCTGACTGTGTTTCTGTATTTGTCTGAAAATA
 TCGGCCCGGGCCAGACTGTTACCACTCCCTTAAGTTTGACCTTAGGTCACTGGAAAGATG
 TCGAGCGGATCGCTCACAACCAGTCGGTAGATGTCAAGAAGAGACGTTGGGTTACCTTCT
 GCTCTGCAGAATGGCCAACCTTTAACGTTCGGATGGCCGCGAGACGGCACCTTTAACCGAG
 ACCTCATCACCCAGGTAAAGATCAAGGTCTTTTCACCTGGCCCGCATGGACACCCAGACC
 AGGTCCCCTACATCGTGACCTGGGAAGCCTTGCTTTTGACCCCCCTCCCTGGGTCAAGC
 CCTTTGTACACCCTAAGCCTCCGCCTCCTCTTCTCCATCCGCCCCGTCTCTCCCCCTTG
 AACCTCCTCGTTTCGACCCCGCCTCGATCCTCCCTTTATCCAGCCCTCACTCCTTCTCTAG
 GCGCCCCCATATGGCCATATGAGATCTTATATGGGGCACCCCCGCCCCCTTGTAAGTTCC
 CTGACCCCTGACATGACAAGAGTTACTAACAGCCCCCTCTCTCCAAGCTCACTTACAGGCTC
 TCTACTTAGTCCAGCACGAAGTCTGGAGACCTCTGGCGGCAGCCTACCAAGAACAAGTGG
 ACCGACCGGTGGTACCTCACCCCTTACCGAGTCGGCGACACAGTGTGGGTCCGCCGACACC
 AGACTAAGAACCTAGAACCCTCGCTGGAAAGGACCTTACACAGTCCTGCTGACCACCCCA
 CCGCCCTCAAAGTAGACGGCATCGCGCTTGATACACGCCGCCACGTGAAGGCTGCCGA
 CCGCGGGGGTGGACCATCCTCTAGACTGCCGGATCTCGAGGGATCCACCACCATGGACCC
 CCATTAAATTGGAATTCCTGCAGCCCCGGGGGATCCACTAGTTCTAGAGCGAATTAATTCC

FIG. 11A-1

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GGTATATTTCCACCATATTGCCGTCTTTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTG
 TCTTCTTGACGAGCATTCTAGGGGTCTTTCCCTCTCGCCAAAGGAATGCAAGGTCTGT
 TGAATGTCGTGAAGGAAGCAGTTCCTCTGGAAGCTTCTTGAAGACAAACAACGTCTGTAG
 CGACCCCTTTGCAGGCAGCGGAACCCCCACCTGGCGACAGGTGCCTCTGCGGCCAAAAGC
 CACGTGTATAAGATACACCTGCAAAGGCGGCACAACCCAGTGCCACGTTGTGAGTTGGA
 TAGTTGTGGAAAGAGTCAAATGGCTCTCCTCAAGCGTATTCAACAAGGGGCTGAAGGATG
 CCCAGAAGGTACCCCATTTGTATGGGATCTGATCTGGGGCCTCGGTGCACATGCTTTACAT
 GTGTTTAGTCGAGGTAAAAAACGTCTAGGCCCCCGAACCACGGGGACGTGGTTTTCTCT
 TTGAAAAACACGATGATAATATGGGGGATCCACCGGTGCGCCACCATGGTGAGCAAGGGCG
 AGGAGCTGTTACCGGGGTGGTGCCCATCTGGTTCGAGCTGGACGGCGACGTAAACGGCC
 ACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGA
 AGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCCTGGCCCACCTCGTGACCACCTGA
 CCTACGGCGTGCAAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCACGACTTCTTCA
 AGTCCGCCATGCCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCA
 ACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGC
 TGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAAC
 ACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAAC
 TCAAGATCCGCCACAACATCGAGGACGGCAGCGTGAGCTCGCCGACCACTACCAGCAGA
 ACACCCCATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGAGCACCCAGT
 CCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTGCTGGAGTTCGTGA
 CCGCCGCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAAGCGGCCGCTCGACGA
 TAAAATAAAGATTTTATTTAGTCTCCAGAAAAAGGGGGAATGAAAGACCCACCTGTA
 GGTTTGGCAAGCTAGCTTAAGTAACGCCATTTTGCAAGGCATGGAAAAATACATAACTGA
 GAATAGAGAAGTTCAGATCAAGGTCAGGAACAGATGGAACAGCTGAATATGGGCCAAACA
 GGATATCTGTGGTAAGCAGTTCCTGCCCCGGCTCAGGGCCAAGAACAGATGGAACAGCTG
 AATATGGGCCAAACAGGATATCTGTGGTAAGCAGTTCCTGCCCCGGCTCAGGGCCAAGAA
 CAGATGGTCCCGAGATGCGGTCCAGCCCTCAGCAGTTTCTAGAGAACCATCAGATGTTTC
 CAGGGTGCCCCAAGGACCTGAAATGACCCTGTGCCCTTATTTGAACTAACCAATCAGTTCG
 CTTCTCGCTTCTGTTTCGCGCGCTTCTGCTCCCCGAGCTCAATAAAAGAGCCACACCC
 TCACTCGGGGCGCCAGTCTCCGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATAA
 ACCCTCTTGCAAGTTGCATCCGACTTGTGGTCTCGCTGTTCTTGGGAGGGTCTCCTCTGA
 GTGATTGACTACCCGTCAGCGGGGGTCTTTCATTTCCGACTTGTGGTCTCGCTGCCTTGG
 GAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTTCACATGCAGCATGTAT
 CAAAATTAATTTGGTTTTTTTTTCTTAAGTATTTACATTAAATGGCCATAGTTGCATTAAT
 GAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCGTATTGGCGCTCTTCCGCTTCTCTGCT
 CACTGACTCGCTGCGCTCGGTCTCGGTGCGGCGAGCGGTATCAGCTCACTCAAAGGC
 GGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGG
 CCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCG
 CCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGG
 ACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGAC
 CCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCA
 TAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCGCTCCAAGCTGGGCTGTGT
 GCACGAACCCCCGTTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTC
 CAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAG
 AGCGAGGTATGTAGGCGGTGCTACAGAGTTCCTGAAGTGGTGGCCTAACTACGGCTACAC

FIG. 11A-2

TAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGT
TGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTTGTTTGCAA
GCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGG
GTCTGACGCTCAGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGAGATTATCAAA
AAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTGCGCAAATCAATCTAAAG
TATATATGAGTAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTC
AGCGATCTGTCTATTTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTAC
GATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTC
ACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGG
TCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAG
TAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTC
ACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTAC
ATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAG
AAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTAC
TGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTG
AGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCCGGCGTCAACACGGGATAATACCGC
GCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAACT
CTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTG
ATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAA
TGCCGCAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTT
TCAATATTATTGAAGCATTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATG
TATTTAGAAAAATAAACAAATAGGGGTTCGCGCACATTC

FIG. 11A-3

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1-845 CMVpromoter/R/U5 5' LTR
 1322 GAG ATG-ATC mutation
 850-2100 extended ψ region
 2151-2865 GFP coding region
 2866-2894 GGS SGGG linker
 2895-2952 FMDV 2a cleavage sequence
 2953-3004 Bstx1/Bstx1/HinD3/Hpa1/Sal1/Not1 polylinker
 3052-3645 3' LTR
 3652-5715 pGEM backbone (pUC origin, ampR)

ATCACGAGGCCCTTTTCGTCTTCAAGAACAGCTTTGCTCTTAGGAGTTTCCTAATACATC
 CCAAACCTCAAATATATAAAGCATTTGACTTGTTCTATGCCCTAGTTATTAATAGTAATC
 AATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACGG
 TAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCGCCCATTGACGTCAATAATGACG
 TATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTT
 ACGGTAAACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTA
 TTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATGACCTTATGG
 GACTTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCG
 GTTTTGGCAGTACATCAATGGGCGTGGATAGCGGTTTGA CTCACGGGGATTTCCAAGTC
 TCCACCCCATTGACGTCAATGGGAGTTTGT TTTTGGCACCAAAATCAACGGGACTTTCCA
 AAATGTCGTAACAACTCCGCCCCATTGACGCAAAATGGGCGGTAGGCATGTACGGTGGGA
 GGTCTATATAAGCAGAGCTCAATAAAAGAGCCCAACCCCTCACTCGGGGCGCCAGTC
 CTCCGATTGACTGAGTCGCCCGGGTACCCGTGTATCCAATAAACCCCTCTTGCA GTTGCA
 TCCGACTTGTGGTCTCGCTGTTCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGT
 CAGCGGGGGTCTTTCATTTGGGGGCTCGTCCGGGATCGGGAGACCCCTGCCCAGGGACC
 ACCGACCCACCACCGGGAGGTAAGCTGGCCAGCAACTTATCTGTGTCTGTCCGATTGTC
 TAGTGTCATGACTGATTTTATGCGCCTGCGTCCGTA CTAGTTAGCTAACTAGCTCTGT
 ATCTGGCGGACCCGTGGTGGAACTGACGAGTTCGGAACACCCGGCCGCAACCCTGGGAG
 ACGTCCCAGGGACTTCGGGGGCGGTTTTTGTGGCCCGACCTGAGTCCAAAAATCCCGAT
 CGTTTTGGACTCTTTGGTGCACCCCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGA
 CGAGAACCTAAAACAGTTCCCGCCTCCGTCTGAATTTTGTCTTTCGGTTTGGGACCGAA
 GCCGCGCCGCGCGTCTTGTCTGCTGCAGCATCGTTCTGTGTTGTCTCTGTCTGACTGTG
 TTTCTGTATTTGTCTGAAAATATCGGCCCGGGCCAGACTGTTACCACTCCCTTAAGTTT
 GACCTTAGGTCACTGGAAAGATGTCGAGCGGATCGCTCACAACCAGTCGGTAGATGTCA
 AGAAGAGACGTTGGGTACCTTCTGCTCTGCAGAATGGCCAACCTTTAACGTCGGATGG
 CCGCGAGACGGCACCTTTAACCGAGACCTCATCACCAGGTTAAGATCAAGGTCTTTTC
 ACCTGGCCCGCATGGACACCCAGACCAGGTCCCTTACATCGTGACCTGGGAAGCCTTGG
 CTTTTGACCCCCCTCCCTGGGTCAAGCCCTTTGTACACCCTAAGCCTCCGCCTCCTCTT
 CCTCCATCCGCCCCGTCTCTCCCCCTTGAACCTCCTCGTTTCGACCCCGCCTCGATCCTC
 CCTTTATCCAGCCCTCACTCCTTCTCTAGGCGCCCCCATATGGCCATATGAGATCTTAT
 ATGGGGCACCCCCGCCCCCTTGTAACCTTCCCTGACCCTGACATGACAAGAGTTACTAAC
 AGCCCTCTCTCAAGCTCACTTACAGGCTCTCTACTTAGTCCAGCACGAAGTCTGGAG
 ACCTCTGGCGGCAGCCTACCAAGAACAACTGGACCGACCGGTGGTACCTCACCTTACC
 GAGTCGGCGACACAGTGTGGGTCCGCCGACACCAGACTAAGAACCTAGAACCTCGCTGG
 AAAGGACCTTACACAGTCCTGCTGACCACCCCAACCGCCCTCAAAGTAGACGGCATCGC
 AGCTTGATACACGCCGCCACGTGAAGGCTGCCGACCCCGGGGGTGGACCATCCTCTA
 GACTGCCGGATCTCGAGGGATCCACCATGGTGAGCAAGGGCGAGGAGCTGTTACCGGG

FIG. 11B-1

GTGGTGCCCATCCTGGTTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTC
 CGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCA
 CCGGCAAGCTGCCCCGTGCCCTGGCCACCCCTCGTGACCACCCTGACCTACGGCGTGCGAG
 TGCTTCAGCCGCTACCCCGACCACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCC
 CGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCC
 GCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATC
 GACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACCTACAACAGCCA
 CAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACCTCAAGATCC
 GCCACAACATCGAGGACGGCAGCGTGCGAGCTCGCCGACCACTACCAGCAGAACACCCCC
 ATCGGCGACGGCCCCGTGCTGCTGCCCCGACAACCACTACCTGAGCACCCAGTCCGCCCT
 GAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTCTGCTGGAGTTCGTGACCGCCG
 CCGGGATCACTCTCGGCATGGACGAGCTGTACAAGGAATTCGGAGGTGGCAGCGGTGGC
 GGTGAGCTGTTGAATTTTGACCTTCTTAACTTGCGGGAGACGTGCGAGTCCAACCCCTGG
 GCCACCACCACCATGGAAGCTTCCATTAAATTTGGTTAACGTGACGCGGGCCGCTCGAC
 GATAAAATAAAAGATTTTATTTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCCACCT
 GTAGGTTTGGCAAGCTAGCTTAAAGTAACGCCATTTTGCAAGGCATGGAAAAATACATAA
 CTGAGAATAGAGAAGTTCAGATCAAGGTGAGGAACAGATGGAACAGCTGAATATGGGCC
 AAACAGGATATCTGTGGTAAGCAGTTCCTGCCCCGGCTCAGGGCCAAGAACAGATGGAA
 CAGCTGAATATGGGCCAAACAGGATATCTGTGGTAAGCAGTTCCTGCCCCGGCTCAGGG
 CCAAGAACAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTTCTAGAGAACCATCA
 GATGTTTCCAGGGTGCCCCAAGGACCTGAAATGACCCTGTGCCTTATTTGAACTAACCA
 ATCAGTTCGCTTCTCGCTTCTGTTTCGCGCGCTTCTGCTCCCCGAGCTCAATAAAAGAGC
 CCACAACCCCTCACTCGGGGCGCCAGTCCCTCCGATTGACTGAGTCGCCCCGGGTACCCGT
 GTATCCAATAAACCCCTCTTGACAGTTGCATCCGACTTGTGGTCTCGCTGTTCTTGGGAG
 GGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTTTCATTTCCGACTTGTGGT
 CTCGCTGCCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTCA
 CATGCAGCATGTATCAAAATTAATTTGGTTTTTTTTTCTTAAGTATTTACATTAAATGGC
 CATAGTTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCGTATTGGCGCT
 CTTCCGCTTCTCCTCGCTCACTGACTCGCTGCGCTCGGTGCTTCGGCTGCGGCGAGCGGTA
 TCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAA
 GAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGG
 CGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAG
 AGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCT
 CGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTCTCCCTT
 CGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTC
 GTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTACGCCCGACCGCTGCGCCTT
 ATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAG
 CAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTG
 AAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCT
 GAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCG
 CTGGTAGCGGTGGTTTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCT
 CAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCACG
 TTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATT
 AAAAATGAAGTTTGGCGAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGT
 TACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCAT
 AGTTGCTGACTCCCCGTGCTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCC
 CCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATA

FIG. 11B-2

AACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTCCAT
CCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGC
GCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGCTCGTCGTTTGGTATGGCT
TCATTCAGCTCCGGTTCCTCAACGATCAAGGCGAGTTACATGATCCCCATGTTGTGCAA
AAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGT
TATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCATGCCATCCGTAAGA
TGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGCG
ACCGAGTTGCTCTTGCCCGGCGTCAACACGGGATAATACCGCGCCACATAGCAGAACTT
TAAAAGTGCTCATCATTTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCG
CTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTT
TACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGG
GAATAAGGGCGACACGGAATGTTGAATACTCATACTCTTCCTTTTTTCAATATTATTGA
AGCATTTATCAGGGTTATTGTCTCATGACATTAACCTATAAAAATAGGCGT

FIG._11B-3

209110 92699660

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1-845 CMVpormoter/R/U5 5' LTR
 1322 GAG ATG-ATC mutation
 850-2100 extended ψ region
 2146-2173 two Bstx1 peptide cloning sites
 2173-2214 Eor1/Apa1/Hpa1/Not1 polylinker
 2262-2855 3' LTR
 2855-4901 pGEM backbone (pUC origin, ampR)

ATCACGAGGCCCTTTCGTCTTCAAGAACAGCTTTGCTCTTAGGAGTTTCCTAATACATC
 CCAAACCTCAAATATATAAAGCATTTGACTTGTTCTATGCCCTAGTTATTAATAGTAATC
 AATTACGGGGTCATTAGTTCATAGCCATATATGGAGTTCGCGGTTACATAACTTACGGT
 AAATGGCCCCGCTGGCTGACCGCCCAACGACCCCCGCCCATTTGACGTCAATAATGACGT
 ATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTA
 CGGTAAACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTAT
 TGACGTCAATGACGGTAAATGGCCCGCTGGCATTATGCCCAGTACATGACCTTATGGG
 ACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGG
 TTTTGGCAGTACATCAATGGGCGTGGATAGCGGTTTGACTCACGGGGATTTCCAAGTCT
 CCACCCCATTTGACGTCAATGGGAGTTTGT TTTTGGCACCAAAATCAACGGGACTTTCAA
 AATGTCGTAACAACTCCGCCCCATTGACGCAAAATGGGCGGTAGGCATGTACGGTGGGAG
 GTCTATATAAGCAGAGCTCAATAAAAGAGCCACAACCCCTCACTCGGGGCGCCAGTCC
 TCCGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATAAACCTCTTGACAGTTGCAT
 CCGACTTGTGGTCTCGCTGTTCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTC
 AGCGGGGGTCTTTTCATTTGGGGGCTCGTCCGGGATCGGGAGACCCCTGCCCAGGGACCA
 CCGACCCACCACCGGGAGGTAAGCTGGCCAGCAACTTATCTGTGTCTGTCCGATTGTCT
 AGTGTCTATGACTGATTTTATGCGCCTGCGTCGGTACTAGTTAGCTAACTAGCTCTGTA
 TCTGGCGGACCCGTGGTGGAAGTACGAGTTCGGAACACCCGGCCGCAACCTGGGAGA
 CGTCCCAGGGACTTCGGGGGGCCGTTTTTGTGGCCCGACCTGAGTCCAAAAATCCCGATC
 GTTTTGGACTCTTTGGTGACCCCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGAC
 GAGAACCTAAACAGTTCCCGCCTCCGTCTGAATTTTGTCTTTCGGTTTGGGACCGAAG
 CCGCGCCGCGCGTCTTGCTGCTGACGATCGTTCTGTGTTGTCTCTGTCTGACTGTGT
 TTCTGTATTTGTCTGAAAATATCGGCCCCGGGCCAGACTGTTACCACTCCCTTAAGTTTG
 ACCTTAGGTCACTGGAAAGATGTGAGCGGATCGCTCACAACCAGTCGGTAGATGTCAA
 GAAGAGACGTTGGGTACCTTCTGCTCTGCAGAATGGCCAACCTTTAACGTCGGATGGC
 CGCGAGACGGCACCTTTAACCGAGACCTCATCACCCAGGTAAAGATCAAGGTCTTTTCA
 CCTGGCCCCGCATGGACACCCAGACCAGGTCCCTTACATCGTGACCTGGGAAGCCTTGGC
 TTTTGACCCCCCTCCCTGGGTCAAGCCCTTTGTACACCCTAAGCCTCCGCCTCCTCTTC
 CTCCATCCGCCCCGTCTCTCCCCCTTGAACCTCCTCGTTTCGACCCCGCCTCGATCCTCC
 CTTTATCCAGCCCTCACTCCTTCTCTAGGCGCCCCCATATGGCCATATGAGATCTTATA
 TGGGGCACCCCCGCCCCCTTGTAACCTTCCCTGACCCTGACATGACAAGAGTTACTAACA
 GCCCCCTCTCTCCAAGCTCACTTACAGGCTCTCTACTTAGTCCAGCACGAAGTCTGGAGA
 CCTCTGGCGGCAGCCTACCAAGAACAAGTGGACCGACCGGTGGTACCTCACCTTACCG
 AGTCGGCGACACAGTGTGGGTCCGCCGACACCAGACTAAGAACCTAGAACCTCGCTGGA
 AAGGACCTTACACAGTCCTGCTGACCACCCCCACCGCCCTCAAAGTAGACGGCATCGCA
 GCTTGGATACACGCCGCCACGTGAAGGCTGCCGACCCCGGGGGTGGACCATCCTCTAG
 ACTGCCGGATCTCGAGGGATCCACCACCATGGACCCCCATTAAATTGGAATTCGGGGCC
 CAAGCTTTGTAAACGTCGACGCGGCCCGCGTCGACGATAAAATAAAAGATTTTATTAG
 TCTCCAGAAAAAGGGGGGAATGAAAGACCCACCTGTAGGTTTGGCAAGCTAGCTTAAG
 TAACGCCATTTTGCAAGGCATGGAAAAATACATAACTGAGAATAGAGAAGTTCAGATCA

FIG. 11C-1

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AGGTCAGGAACAGATGGAACAGCTGAATATGGGCCAAACAGGATATCTGTGGTAAGCAG
 TTCCTGCCCCGGCTCAGGGCCAAGAACAGATGGAACAGCTGAATATGGGCCAAACAGGA
 TATCTGTGGTAAGCAGTTCTGCCCCGGCTCAGGGCCAAGAACAGATGGTCCCCAGATG
 CGGTCCAGCCCTCAGCAGTTTCTAGAGAACCATCAGATGTTTCCAGGGTGCCCCAAGGA
 CCTGAAATGACCCTGTGCCTTATTTGAACTAACCAATCAGTTCGCTTCTCGCTTCTGTT
 CGCGCGCTTCTGCTCCCCGAGCTCAATAAAAGAGCCACAAACCCCTCACTCGGGGCGCC
 AGTCCTCCGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATAAACCCCTCTTGCACT
 TGCATCCGACTTGTGGTCTCGCTGTTCTTGGGAGGGTCTCCTCTGAGTGATTGACTAC
 CCGTCAGCGGGGGTCTTTTCATTTCCGACTTGTGGTCTCGCTGCCTTGGGAGGGTCTCCT
 CTGAGTGATTGACTACCCGTCAGCGGGGGTCTTCACATGCAGCATGTATCAAAATTAAT
 TTGGTTTTTTTTCTTAAGTATTTACATTAAATGGCCATAGTTGCATTAATGAATCGGCC
 AACGCGCGGGGAGAGGCGGTTTGCGTATTGGCGCTCTTCCGCTTCTCGCTCACTGACT
 CGCTGCGCTCGGTCTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATA
 CGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCA
 AAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCC
 CTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTA
 TAAAGATACCAGGCGTTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCCT
 GCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATA
 GCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCGCTCCAAGCTGGGCTGTGTG
 CACGAACCCCCCGTTACGCCCGACCGCTGCGCCTTATCCGGTAACCTATCGTCTTGAGTC
 CAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCA
 GAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTAC
 ACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAG
 AGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTTGTTT
 GCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTTGATCTTTTCT
 ACGGGGTCTGACGCTCAGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTCAATGAGATT
 ATCAAAAAGGATCTTCACCTAGATCCTTTTTAAATTAATAAATGAAGTTTGCAGCAATCAA
 TCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCA
 CCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCGTGTA
 GATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAG
 ACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACCCAGCCAGCCGGAAGGGCCGAG
 CGCAGAAGTGGTCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGA
 AGCTAGAGTAAGTAGTTTCGCCAGTTAATAGTTTTCGCAACGTTGTTGCCATTGCTACAG
 GCATCGTGGTGTACGCTCGTCTGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGA
 TCAAGGCGAGTTACATGATCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCC
 TCCGATCGTTGTGAGAAGTAAGTTGGCCGCGAGTGTTATCACTCATGGTTATGGCAGCAC
 TGCATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTAC
 TCAACCAAGTCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTC
 AACACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATATTGGAAAAC
 GTTCTTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAA
 CCCACTCGTGACCCCAACTGATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTG
 AGCAAAAACAGGAAGGCAAAATGCCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTT
 GAATACTCATACTCTTCCTTTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTC
 ATGACATTAACCTATAAAAAATAGGCGT

FIG. 11C-2

(1) C12ScFas Survival construct

C12ScFas: epsilon-cFas (CD95)-Ires-Hygro-BGH PolyA put into C12s vector backwards so that no leaky transcription happens through the cmv promoter.

atcacgaggcccttctcgtcttcaagaacagccttctttaggagtttccctaatacatatcccaaaactcaataataataaagc
atttgactgttctatgcccctagttatttaataagtaatacaattacggggtcattagttcatagcccatatattggagttccg
cgttacataacttacggtaaatggcccgctggtgacggcccaacgacccccgccattgacgtcaataatgacgtatg
ttcccatagtaacgccaatagggaactttccattgacgtcaatgggtggagattttacggtaaaactggccacttggcagta
catcaagtgtatcatatgccaaagtacgccccctattgacgtcaatgacggtaaaactggcccgctggcattatgccccagta
catgacctatgggactttccctacttggcagtagacatctacgtatttagtcatcgtattaccattgacgtcaatgggagtttg
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ttttggcaccaaaatacagggaactttccaaaatgctgaacaaactccgcccatgacgcgaatggcggttaggcatgt
acggtgggaggtctatataagcagagctcaataaaagagcccaacccctcactcggggcgccagtcctccgattgact
gagtcgccgggtaccggtgtatcccaataaaacccctcttgacgttgcatccgacttgggtctcgtcttcccttgggaggg
tctcctctgagtgattgactaccggtcagcggggtctttcatattgggggtcgtccgggtatcgggagacccctgcccag
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cgctccgctctgaatttttgcgttctgtatttgggttgggacggaagccgcccggcgtcttctgtctgctgacgcatcgttctgtgt
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cgctgaaaaggaccttacacagtcctgtgacacaccccccacgcccctcaaaagttagacggcatcgagcttggatacacgc
cgccccacgtgaaggctgcgacccccgggggtggaacctcctcttagactcctcggtatctcgagggtatcctccccCAGCATGCC

TGCTATTGCTTCCCAATCCTCCCCCTTGCTGTCTGCTGCCCCCACCCCCCAGAAATAGAAATGACACCTACTCAGACAA

TGGCATGCAATTTCCTCATTTTATTAGGAAAGGACAGTGGGAGTGCGCACCTTCCAGGGTCAAGGAAGGCACGGGGGAGGG

GCAAAACAACAGATGGCTGGCAACTAGAAAGGCACAGTCGAGGtCTAGCTTGCCAAACCTACAGGTGGGTCTTTTCATTCCC

CCCTTTTCTGGAGACTAAATAAAATCTTTATTTatcgatagatcccggtcggcattactctattcctttgccccctcg
gacgagtgcgtggggcggtttccactatcgcgagtagtctctacacagccatcggtccagacggtcgccgcttctgctg
ggcatctgtacgcccgcagatccgggtccggatcggaattgctgcacatcgacctgcccacagtcgcatcatc
gaaattgctgcaaccaagctctgatagagttggtcaagaccaatcgggagcatatacgcccggagccggtcgatccctg
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aaatcacgccatgtagtattgaccgattccttcgggtccgaattggccgaacccgctcgtctggttaagatcggccgc
agcgtatgcataccatcggtcccggaacgggtgcagaacacgcggcagttcgggttcaggcaggtcttgcaacgtgacac
cctgtgcaacggcggaagatgcaataggtcaggctctcgctaaattcccaatgtcaagcacttcgggaatcgggagcgcg
ggcgtatgcaaaagtgcgataaaacataaacgatccttgtagaaaccatcggcagctgattaccgcaggacatatccacg
ccctccatcatcgaaagctgaaagcacgagatctctcgccctccgagagctgcatcaggtcggaacgtgtcgaactttt
cgatcagaaaactctcgacagacgtcgcggtgagttcaggcttttcagggtattatcatcgtgtttttcaagggaatac
cagtcctccgtggttcgggggcccagacgttttttaacctgcactaaacacatgtaagcatgtgcaccgaggtccccag
atcagatcccatacaatgggtaccttcgggcatccttcagcccttgttgaaatcgttgaggagagccatttgactc
tttccacaactatccaactcacaacgtggcactgggtgtgctggccttgcaggtgtatcttatcacgtgggttttggg
ccgcagagggcacctgtcgccaggtgggggttcgctgctgcctgcaaaagggtcgctacagacgtgtgttcttcaagaagc
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CAGGGTGCAGTTTGTTCACCTTCTAAACCATGCTCTTCATCGCAGAGTGTGCATCTTCTGCATTTATCAGCATAAATGGT
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AACCCGCCCTCCTCAGCTTTAACTCTCGGAGATGCTATTAGTACCTTGAGTATGAACCTTTAACTGTGAGCCAGCAAGCA

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CTGCCAGTGCCTCACGACCAACTTctgcaggaaatcctggacagctccagatgatcagtaaacctggttatttct
gtgccgggcagtgagccctggtaggggagctctgctcagtgcttccagctaaaaatggggtgggaaccccCaggaggg
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ggtagtgaggcatcgacgctctgcttccacgaaagcctgtgaagaaaggatggggggcgcttttgtgcaggagaaatgagg
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ctgtgaccccgcttggagctggcaccctgagtggctgctcaCTTGTACTCACTCCCAGGTCACTGTCTCctcgacGGGCC
GCTCGacgataAAATAAAGATTTTATTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCCCACTGTAGGTTTGGCAAG
ctagCTTAAGTAACCCATTTTGCAAGGCATGGAAAAATACATAACTGAGAAATAGAGAAGTTCAGATCAAGGTCGGAACAG
ATGGAACAGGCAATAAAGAGCCCAACCCCTCACTCGGGGCGCCAGTCCCTCCGATTGACTGAGTCGCCCGGTACCCG
TGTAATCCAAATAAACCCCTCTTGCAAGTTGCATCCGACTTGTGGTCTCGCTGTCTCCTTGGGAGGGTCTCCTCTGAGTGATTGA
CTACCCGTCAGCGGGGCTTTTCacatgcacgCATGTATCAAAATTAATTTGGTTTTTTTCTTAAGTATTTACATTAAT
GGCCATagtttcGTAATCATGGTCATAGCTGTTCCTGTGTGAAATTTGTTATCCGCTCACAATTCACACACAACATACGAG
CCGGAAGCATAAAGTGTAAGCCTGGGGTGCCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCT
TTCCAGTCGGGAAACCTGTGTCGAGCTGCAATTAATGAATCGGCCAACGCGGGGAGAGCGGTTTGCGTATTGGGCG
CTCTTCCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTCTCGGTCTCGGCGGAGCGGTTATCAGCTCACTCAAAGGCGG
TAATACGGTTATCCACAGAAATCAGGGGATAACGCAGGAAAGAAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGT
AAAAAGCCCGGCTGTGGCGTTTTTTCATAGGCTCCGCCCTCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAG
GTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTTCCCCCTGGAAAGCTCCCTCGTGGCTCTCTCTGTTCGACCC

TGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCAGCTGTAGGTATCTC
 AGTTCGGGTAGGTCGTTCCGAAGCTGGCTGTGTGCACGAACCCCGGTTACGCCCGACCGCTGCGCCTTATCCCG
 TAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAG
 CGAGGTATGTAGCGGTGCTACAGAGTCTTGAAGTGGTGGCTTAACCTACGGGTACACTAGAAGGACAGTATTGGGTATC
 TCGCCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGGCAACAAACCACCGCTGGTAGCGG
 TGGTTTTTTTGTGCAAGCAGCAGATTACGCCGAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGT
 CTGACGCTCAGTGGAACGAAAACTCAGGTTAAGGGATTTTGGTCA TGAGATTATCAAAAAGGATCTTCACCTAGATCCTT
 TTAAATTAAAAATGAAGTTTGGCAAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAAT
 CAGTGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCATAGTTGCCCTGACTCCCGCTCGTGTAGATAACTACGA
 TACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTATCAGCA
 ATAAACCAAGCCGGAAGGGCCGAGCGCAGAAAGTGCTCTGCAACTTATCCGCCCTCCATCCAGTCTATTAATTGTTG
 CCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTAC
 GCTCGTCTGTTGGTATGGCTTCA TTCAGCTCCGGTTCCCAACGATCAAGCGAGTTACATGATCCCCCATGTTGTGCAAA
 AAAGCGGTTAGCTCCTTCGGTCCCGATCGTTGTGCAGAAAGTTGGCCGAGTGTATCACTCATGTTATGGCAGC
 ACTGCATAATTCTTACTGTCTATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGagtaactcaaccaagtcattcttgag
 aatagtgtatcgggacaggagttgctcttgccggcggtcaacacgggataataaccgcccacatagcagaactttaaaa
 gtgctcatcattggaaaaacgttcttcggggcgaaaactctcaaggatcttacccgtgttgagatccagttcagatgttaacc
 cactcgtgcacccaactgatcttcagcatctttactcttcacacagcgtttctgggtgagcaaaaaacaggaaggcaaaatg
 ccgcaaaaaagggaataaggcgacacggaaatgttgaatactcatactcttctcttttttcaatatatttgaagcatttat
 cagggttatgtctcatgacattaacctataaaaaataggcgt

THE UNIVERSITY OF CHICAGO

(2) **Ahhh: Survival construct**

2.) Ahhhh: epsilon-cFas' (CD8 or mLy2)-Ires-Hygro-BGHpolyA also in C12s backwards

atcacgagggcccttctgcttccaagaacagcttctgctttaggagtttccataacatccccaaactccaaataataataaagc
atattgacttgttctatgccctagttaataatagtaatacaattacggggtcatagttcatagcccatataggaattccg
cgttacataaacttacggtaaaatggcccgctggctgacgcccaacgaccccgccattgacgtcaataatgacgtatg
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FIG. 13A

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FIG._ 13D